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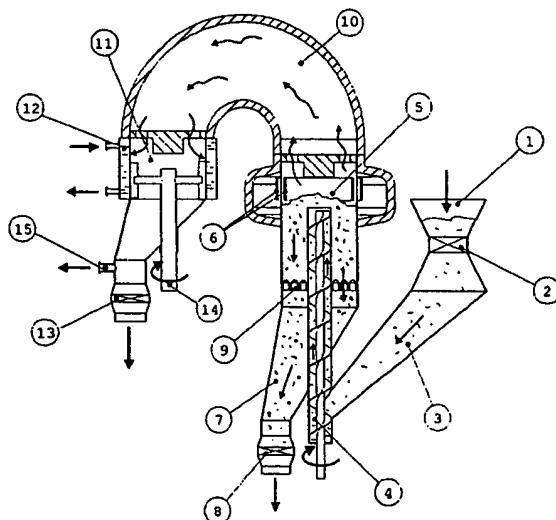
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[Continued on next page]

(54) Title: **AN APPARATUS FOR THE EXTRACTION OF METALLIC MAGNESIUM**



(57) Abstract: The continuous thermal extraction melting unit is composed by a charging hopper (1) that is equipped of system of hydraulic closing (2). The native mineral, through the duct (3), reaches the cochlea of feeding (4) so to be fed in the distillation zone (5). Same equipments of heating are placed on the side walls (6), they provide necessary heat for distillation. The exhausted mineral returns back through the concentric duct (7) to the run of feeding. It reaches the closing exit valve (8) to be unloaded. A extractor crusher (9) provide to facilitate the exhausted mineral extraction. The vapours of magnesium through the duct (10) reach the walls of the condenser (11), fed with cold fluid (12), to condense as metallic magnesium. A scrapper (13) handles to scrape the dust from the walls and to carry it out through the closing exit valve (14). A vacuum pump through the connection (15) allows the extraction of the incondensable gases.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

Description

## AN APPARATUS FOR THE EXTRACTION OF METALLIC MAGNESIUM

Technical field.

My invention is a new type of melting unit for the extraction of the metallic magnesium. It, can be used in the metallurgical field for the production of magnesium from his native mineral.

5

Background of Art.

The extraction of the magnesium from his native mineral is produced in two way: thermic and electrolytic. The thermic extraction is produced in special melting unit that works in  
10 atmospheric vacuum and with appropriate temperature in such way that the metallic magnesium can distill and then can be condensed in a cold room.

The prior art provided a type discontinuous melting unit for the extraction of the magnesium, in fact it is loaded with the  
15 mineral of magnesium and after the magnesium distillation it is unloaded by the residues and reloaded for a new cycle.

The electrolytic extraction of the magnesium is produced in plant that introduce in the environment an elevated pollution

Disclosure of Invention

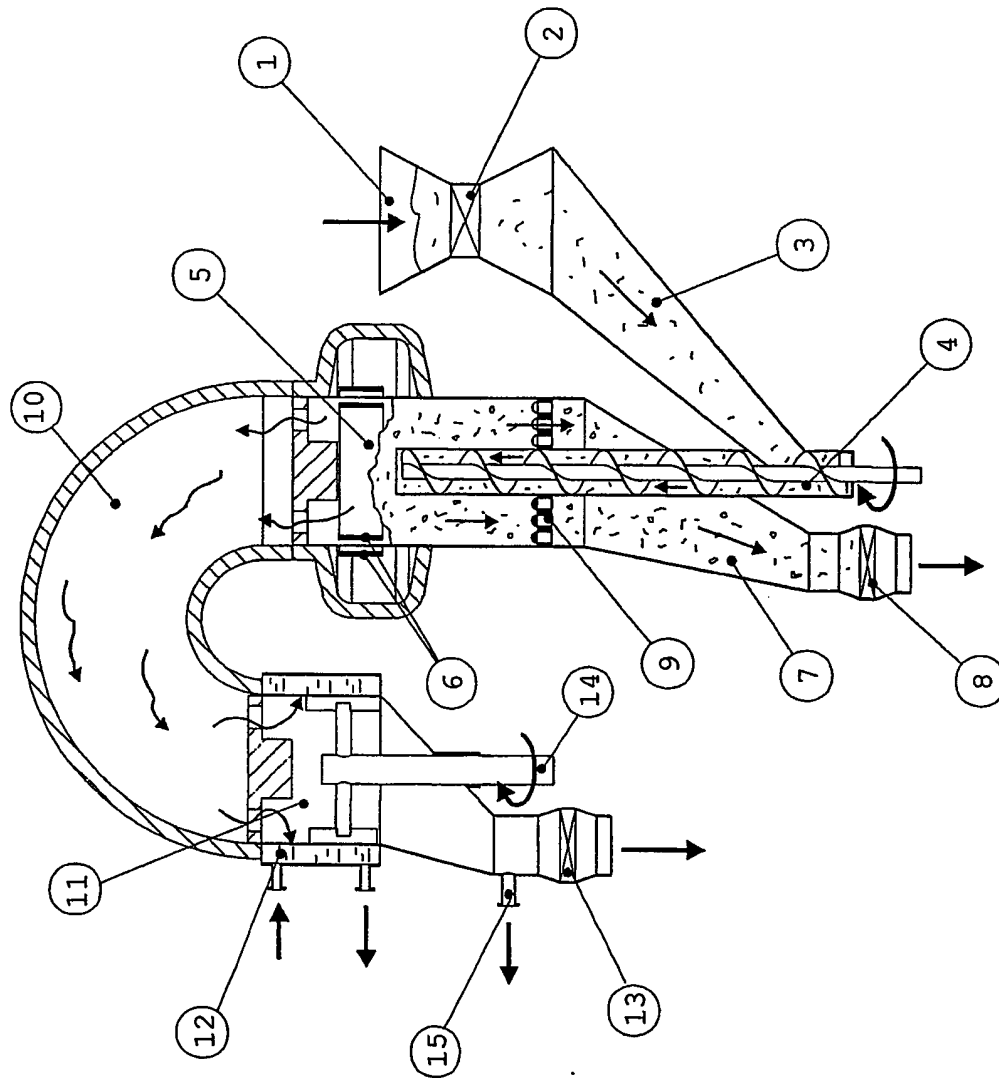
The melting unit, object of my invention, is a continuous extraction melting unit, in fact the mineral is loaded with  
5 continuity, the magnesium is drawn out in continuous and the cinders are drawn out in continuous way

My invention relates a continuous melting unit with operation under atmospheric vacuum and with a proper temperature for the distillation of the metallic  
10 magnesium.

The advantages to use this my special melting unit in alternative to other thermic furnace are the continuity of the process of extraction, while in comparison to the types of process of extraction of the  
15 magnesium by electrolytic plant introduces a very smaller environmental pollution.

Claims

1. A melting unit built in vertical way, in which the native mineral is introduced in coaxial way to the duct  
5 of extraction of the exhausted mineral (part 4 fig.1)
2. The melting unit of claim 1 is characterized by the extraction run of the exhausted mineral that achieves in countercurrent to the introduction run of the native mineral (part 7 fig.1).
- 10 3. The melting unit is provided with extractor crusher of extraction of the exhausted mineral (part 9 fig.1).
4. The melting unit is provided with a harvest and carriage duct of the magnesium vapours to the condenser (part 10 fig.1 ).
- 15 5. The melting unit is provided with a condenser of the magnesium vapours (part 11 fig.1).
6. The melting unit of claim 1 or 2 is provided with a system of heating set inside in the zone of distillation (part 6 fig.1).
- 20 7. The melting unit of claim 6 is provided with a system of heating set outside in the zone of distillation (part fig.6 1).
8. The melting unit is provided with the connection (part 14 fig.1). through which a vacuum pump allows the  
25 extraction of the incondensable gases.



## INTERNATIONAL SEARCH REPORT

Internat<sup>l</sup>      ation No

PCT/IT 02/00357

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 F27B1/00 C22B26/22

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F27B C22B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 264 097 A (PAUL WEISS) 2 August 1966 (1966-08-02)	1,4,5,7, 8
Y	Fig.1; Col.2, 1.24-28; Col.5, 1.71 - Col.6, 1.48	2,3,6
Y	US 4 481 721 A (GRAEFF RODERICH W) 13 November 1984 (1984-11-13) Abstract; Fig.1	2
Y	US 4 186 668 A (TABEL RENE) 5 February 1980 (1980-02-05) Fig.1	3
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ED. BY FATHI HABASHI: "Handbook of Extractive Metallurgy, Volume II"	6
A	1997 , WILEY-VCH , GERMANY XP002215528 Page 994: Bolzano process page 993 -page 996 -----	1-8



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